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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/512,077

12/09/2004

Olivier Marty

04202

2792

23338 7590 07/03/2008
DENNISON, SCHULTZ & MACDONALD
1727 KING STREET
SUITE 105
ALEXANDRIA, VA 22314

EXAMINER

RAO, G NAGESH

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

07/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/512,077 | Applicant(s) MARTY ET AL. | |
| | Examiner G. NAGESH RAO | Art Unit 1792 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/5/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1) Claims 17-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (JP02000091627A).

Examiner has enclosed a machine translation of Yoshida '627 for applicant's review and consideration. Yoshida '627 pertains to the fabrication of a semiconductor LED whereby the substrate and thin layer formed atop are in the nanoscopic scale, thus defining them as nanostructured materials and providing for their utilization in a field such as microelectronics or nanotechnology. Whereby the thin layer is disposed on the substrate via an epitaxial deposition (such as MBE or MOCVD), followed by the radiation heat treatment which in part affects the substrate in order to aid in the heteroepitaxial adherence between the two materials, forcing the substrate to incur internal dislocations, which would inherently result from an initial dilation and contraction of the substrate as a result of the treatment which in turn would effect the thin film but ultimately allow for the two materials to adhere much more strongly to one another. Furthermore as can be denoted by

Figures A and B, an intermediate thin layer can be disposed between the substrate and thin layer (See English Translation enclosed for further details).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2) Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP02000091627A) in view of Pechenik (US Patent No. 6,365,059).

Yoshida 627 as mentioned before described processes for making a heteroepitaxial layered substrate based material at the nano-scale.

However Yoshida 627 failed to teach a lithographic operation to reveal piezoelectric lines or the very least the use of piezoelectric materials incorporated into the process of making the nano-based structured device.

In analogous art pertaining to the manufacturing of nano-based structures, Pechenik 059 teaches the use of methods pertaining to the manufacturing of nano-scale electronic devices. Whereby it is well known to use nano-lithography in etching out portions of material to create patterns for building ground of fabrication of high end circuitry and dielectrics. As well it is well known to employ the use of piezoelectric thin films in these nano-based devices in order to create a more useful surface attaching environment to the thin film structure (See Col 1

Lines 1-68 – Col 2 Lines 1-68, Col 5 Lines 1-11, Col 6 Lines 59-68, and Col 7 Lines 1-18).

It would therefore been obvious to one having ordinary skill in the art at the time of the invention to enhance the teachings of Yoshida 627 with that of Pechenik 059, in the hopes of creating a much more highly efficient nano-based device (See Col 7 Lines 5-10).

Response to Arguments

3) Applicant's arguments filed 6/9/08 have been fully considered but they are not persuasive. Examiner has reviewed the amended claim changes, but respectfully does not agree with the claims overcoming the prior art teachings. As discussed before the process for fabrication of the nanostructured device the formation of the thin layer on the nano-structured support, the internal strains that result, and the dilation or contraction of the “substrate” will inherently occur as a result of the heteroepitaxial layering process of the thin film deposited over the nanostructured substrate. Furthermore Yoshida ‘627 requires the use of MBE or MOCVD for deposition, which generally occur in reaction chambers that require temperature and pressure changes, two factors known to affect a materials property via transition of the DBTT (Ductile-Brittle Transition Temperature) rule, and

therefore would inherently result in the substrate dilating or contracting in response to the temperature, pressure, and chemical changes resulting from the deposition process. At this time Examiner can not concur with applicant's remarks regarding patentability of the claimed invention.

Conclusion

4) **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. NAGESH RAO whose telephone number is (571)272-2946. The examiner can normally be reached on 8:30AM-5PM (INDEPENDENT FLEX SCHEDULE).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MIKHAIL KORNAKOV can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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GNR
/Michael Kornakov/
Supervisory Patent Examiner, Art Unit 1792